NHDOT SPR2 PROGRAM
RESEARCH PROGRESS REPORT

Project # SPR 26962Y	Report Period Year 2020
	☐ Q1 (Jan-Mar) ☐ Q2 (Apr-Jun) ☐ Q3 (Jul-Sep) X Q4 (Oct-Dec)
Project Title: Assessment of Embedded Culvert Low Flow Hydraulics	
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Project Start Date: May 1, 2019	**Project End Date:** April 30, 2021	**Project schedule status:** X On schedule ☐ Ahead of schedule ☐ Behind schedule

Brief Project Description:

The proposed research has two fundamental thrusts: to field study constructed embedded culverts in NH and a thorough literature review of embedded culverts. The project began with a TAG kickoff meeting to provide context for the study and to fine tune the scope. The office portion of the research began with identification of existing NHDOT and other embedded culverts in NH. Lines of communication (phone, e-mail) will also be opened with regulating entities in other states (in neighboring states and Pacific northwest and Alaska) to solicit their experiences with embedded culverts. This will include gathering design specifications from those jurisdictions. The research team will also collect and sift through the technical guidance documents for other states, FHWA, and countries and compare to NH guidance. The construction community will be interviewed to determine if there are limitations in the supply or placement of the embedment material available in New Hampshire. NH DOT provided a list of its embedded culverts. NH DOT personnel were interviewed to determine where they have installed embedded culverts and to collect their design plans. The NHDES permit database will also be searched for all embedded culverts installed in New Hampshire. The embedded culverts from the DOT and DES sources will all be targeted for field visits. Knowledge of the location of each culvert will allow investigation into watershed and hydrologic characteristics at the site of each culvert. These characteristics will be documented via online resources such as StreamStats and GRANIT. The DOT and DES culvert databases will also yield embedded culvert metadata such as: year constructed, embedment particles size distribution, embedment depth, etc.

Progress this Quarter (include meetings, installations, equipment purchases, significant progress, etc.):

The past quarter efforts included: determining site sample particle size distributions from collected samples; developing design variables from design plans; synthesizing data; and reaching out to other states and their agencies overseeing embedded culverts.

Items needed from NHDOT (i.e., Concurrence, Sub-contract, Assignments, Samples, Testing, etc.):

To meet some of the original project objectives, we would like to have the NHDOT names and contact information of those personnel who oversaw NHDOT embedded culvert projects. The objective is to determine if there are limitations in the supply or placement of the culvert embedment material.

Anticipated research next three (3) months:

In the next 3 months we plan to: continue to synthesize data to date and contact agencies from other states to gather information pertinent on other embedment approaches, designs, and performance. We also hope to chat with NHDOT personnel about actual projects they supervised. Lastly, we will draft the final report and plan for the final TAG meeting.

Circumstances affecting project:

The most dramatic circumstance was that UNH shut down all research and travel the middle of March 2020 and allowed very slow re-opening by the end of May 2020. This limited what we were able to complete. However, this project was able to ramp back up the very end of June 2020 and all sites in the original database were visited and monitored by mid-September 2020.

Budget, scope, and timing are all on schedule.

Tasks (from Work Plan)	Planned % Complete	Actual % Complete
Task 1 Kickoff meeting	100%	100%
Task 2 Field Efforts	95%	95%
Task 3 Review of other Technical Guidance	30%	15%